REMARKS

Reconsideration and allowance of the above identified application is respectfully requested in light of the above amendments and the following remarks.

The single base claim of the present application is directed to a method for linearizing a non-linear output of a sensor in a simple and cost effective manner. More particularly, the method involves linearizing a non-linear curve produced by an analog linearization circuit 1, with digitally adjustable parameters which are output by a sequence controller 2. The linearization is thereby rendered essentially automatic by the sequence controller. The advantages of this system are set forth in detail in the specification of the present application.

In the Official Action, Claims 1-8, 12-32, 34-37 and 34-41 were rejected as being anticipated by Kondraske '655. Kondraske discloses an adaptable method and apparatus for calibrating and conditioning sensor output to conform to a desired transfer function. Before the first usage of the system a calibration phase has to be conducted. First the highest and lowest sensor output is determined. These values are used to calculate gain and offset values which are used for scaling sensor output. The third step comprises the building of a look-up table. The condition of the physical quantity is varied over the range of interest and measurements are repeated with both a sensor and a reference transducer. These measurements are used to build a changeable look-up table where for each condition a sensor measurement corresponds to a reference transducer measurement.

After the look-up table is built, the system is ready to measure the physical quantity in an unknown condition using the sensor. The output of the sensor is adjusted for offset and gain in real-time using the values calculated during calibration. These sensor signals are digitized and used as a pointer to enter the look-up table to determine a reference value corresponding to the sensor signal. If there is no stored sensor signal available, a corresponding reference value is calculated using interpolation, e.g. linear interpolation. As interpolation always lacks in accuracy, a look-up table with a large number of values is desirable. The values taken from the look-up table are output by a D/A converter.

The usage of a look-up table includes the digitizing of the sensor signals, but problems arise if the sensor signals have to be adapted with high data rates. A/D converters which can handle sensor signals at high resolution with high data rates are very expensive. Besides that, the calibration phase is time consuming as the look-up table should be reasonably sized. During the calibration phase, an expensive reference transducer is necessary.

It will accordingly be seen that Kondraske does not teach or suggest the linearization method as presently claimed, and particularly the concept of linearizing a non-linear curve with an analog linearization circuit and which utilizes digitally adjustable parameters which are output by a sequence controller.

Claims 9-11 were rejected as being unpatentable over Kondraske in view of Yunus '383. Yunus discloses a method and system for calibrating a sensor and for providing polynomial compensation of a temperature coefficient. Although this document discloses an analog circuit for adjusting the sensor signal, it does not teach a method for calibrating the circuit in the manner of the present invention, and thus Yunus does not supply the above noted deficiencies of the base reference to Kondraske.

Claim 33 was rejected as being unpatentable over Kondraske in view of Bechtel '052. The Bechtel patent discloses an apparatus for measuring relative humidity within a given environment, and it does not teach both the digital adjustment of the parameters of the analog linearization circuit and the method for calibrating the circuit in the manner as claimed. Thus here again, the secondary reference to Bechtel does not supply the above noted deficiencies of the Kondraske patent.

Claim 38 was rejected as being unpatentable over Kondraske in view of Spofford '220. The Spofford patent discloses a system for linearization of a thermistor temperature sensing system which extends the linearization in a piecewise manner at at least one temperature extreme where linearity typically severely deteriorates. However, Spofford does not teach the digital adjustment of the analog linearization circuit and the calibration in the manner as claimed, and thus it also does not supply the deficiencies of Kondraske as noted above.

In the Official Action, the Examiner objected to the presence of the word "means" in the Abstract, and this objection has been overcome by the above amendment to the Abstract.

For the reasons set forth above, it is respectfully submitted that all of the pending claims are in condition for immediate allowance, and such action is solicited.

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 25, 2005

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